was laid on the table. It gave a satisfactory explanation of an imperfect entry in the Society's accounts,

The Bye-laws of the Richmond Agricultural Society were submitted.

The Board then adjourned.

CONSTITUTION OF WEYMOUTH AGRICULTURAL SOCIETY, DIGBY COUNTY.

1. This Society shall be known as the Weymouth Agricultural Society.

2. The officers of this Society shall consist of a President, Vice-President, Secretary, Treasurer, and a Board of five Directors, all of whom shall be chosen annually.

3. The object of this Society shall be the promotion and encouragement of agriculture among its members, according to the spirit of the Chapter of the Revised Statutes.

4. This Society shall hold its regular meetings quarterly on the first Saturdays in March, June and September. Special meetings may be called at any time, when required, by the President, upon one week's notice thereof being given.

5. The funds of this Society shall be expended in such manner as shall be determined by a majority of members present at a regular meeting, but the Directors shall be empowered to transact any business which they may consider necessary to the prosperity of the Society, such business not being in opposition to any direct vote of the Society at a regular meeting.

6. All funds in the hands of the Treasurer, when not required for immediate use, shall be deposited in the Savings' Bank to the credit of the Society, unless the Directors order the same to be otherwise invested.

7. All seeds, implements, &c., imported by the Society shall be sold to the members at wholesale cost price, the Society paying the expenses of freight upon the same.

8. These rules may be added to, amended, or expunged at any regular meeting by a two-thirds vote, providing such amendment be in conformity with the law.

PHOSPHATES.

Part of an Address at the New York State Grange, by Prof. G. C. Caldwell, of Cornell University.

If there were time for it, I might show that lime and potash, ingredients of the food of plants that are always present in the plant, and in the case of the latter especially, and in quite large and uniform proportions in some parts of the plant, are exported in much smaller quantities than the phosphoric acid, in the plants ordinarily sold. Phosphoric acid appears to be the ingredient of plant food above all others that we have been carrying off from the soils of our farms in the course of the fifty years or more that we have been cultivating them, and it is only within the last few years that we have given any thought to replacing the loss. In England, where soil has been under cultivation for a much longer period, they began to feel the deficiency of phosphates many years ago, and we are now beginning to follow in their track. In Morton's Cyclopædia of Agriculture we are told how the farmers of England began long ago to be discouraged. Their soils had been deteriorating for many years, under somewhat the same wasteful system of cultivation, evidently, that has been so largely followed in this country, especially in the west. A point was reached where, whatever system the farmer followed, his crops were steadily diminishing; in some places the condition of things was so bad that wheat was not included at all in the rotation. It was the introduction of bone manure, just at this point, that saved the agriculture of England, and entirely changed the aspect of affairs.

From the consideration of the relation between phosphate in the soil and the phosphate in the crops that we allow to leave the farm, we pass naturally to the consideration of the important subject of phosphates as manures. I should, however, wear your patience all out, if I should attempt to consider all the forms in which these manures are offered to the farmer. I must, therefore, confine my attention to the most important one, superphosphate of lime. This superphosphate, about which so much is said now-a-days —what is it? Before I can answer this question satisfactorily, I must digress a little to explain a very interesting property of phosphoric acid, upon which the difference between a superphosphate and an ordinary mineral phosphate, or the phosphate in bones, is based.

In the early part of my lecture I made the statement that there are several phosphates of lime, containing with the same quantity of acid different quantities of the base. Three of these phosphates are very interesting, from an agricultural point of view. Starting with the one which I have already described as the most common, and the only one found in the rocks, and containing for every one hundred and forty-two parts of the acid one hundred and sixty eight parts of lime, we can prepare from that, by suitable processes, another phosphate containing one-third less lime, or one hundred and twelve parts; and from that another can be obtained containing still another third less lime, or only fifty six parts. The first phosphate, the starting point, we may call, as already stated, the tri-calcic phosphate, the substance calcium being one of the constituents of lime. The second we may call di-calcic phosphate, and the third mono-calcic phosphate. The scond compound contains twice as much lime, or twice as much calcium, as the third or last mentioned one, and hence the the term di-calcic, and the one first mentioned contains three times as much lime or calcium as the third, and hence the term tri-calcic phosphate.

In examining the properties of these different phosphates, we find a difference that has an important bearing in respect to their usefulness as fertilizers. The tri-calcic phosphate is quite insoluble in water, the mono-calcic phosphate is very soluble, and the di-calcic phosphate stands between the other two as to solubility. This is an important difference, because plant-food in the soil must first be dissolved before it can enter at the roots, and the more soluble a constituent of plant-foot is in a fertilizer the more valuable it is, because a larger proportion of it becomes accessible to the plant during the season of growth. No constituent of the soil, or any fertilizer that is ever applied to the soil, is absolutely insoluble, and if time enough is allowed the whole of it may be taken into solution; but more than this is always required for remunerative plant growth. There must be a greater rapidity of solution, so that the wheat crop can, during the growing season, easily find its eighteen pounds of phosphoric acid, or the Indian corn its fifty pounds or more, and the turnip crop its one hundred and forty or fifty pounds.

All three of the calcic phosphates which I have described are to be found, at least in nearly all cases in our ordinary superphosphates. The tri-calcic phosphate, from its insolubility, is known as insoluble phosphate, the mono-calcic phosphate as soluble phosphate, and the di-calcic salt as the reverted phosphate, because it is supposed to be produced by reversion of the mono-calcic or soluble phosphate back to the di-calcic as the superphosphate becomes old. In reports of analyses of phosphates, the terms soluble, reverted and insoluble phosphoric acid are commonly used, instead of soluble, reverted, and insoluble phosphate. It is hardly necessary to add that the larger the proportion of soluble acid a superphosphate contains, the more valuable it is. In regard to the relative value of the three conditions of the acid, soluble, reverted, and insoluble, there is some variety of opinion among chemists, for the values are hard to fix with any degree of accuracy, but reverted acid is generally considered to be worth from two to three times, and soluble acid from three to four